

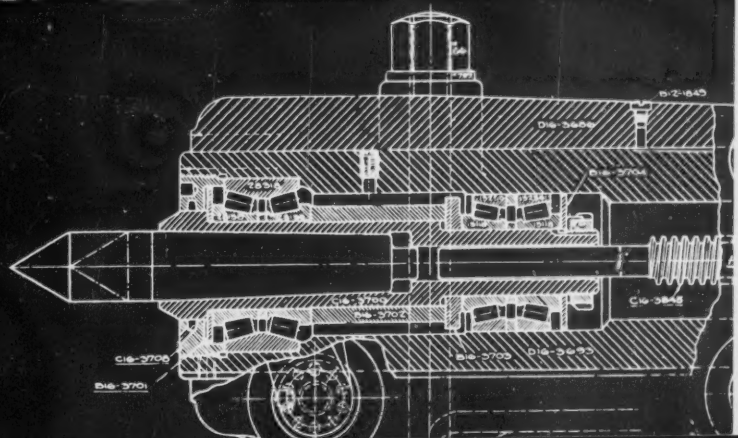
# Industrial Standardization

and Commercial Standards Monthly



*See Article  
on Page 151*

**June  
1937**



***This Issue: Our Front Cover: Boring mill in action, courtesy Taft-Peirce Manufacturing Company; blue-print showing taper of a standard center inserted in spindle, courtesy Hendey Machine Company.***

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# Machine Tapers

## Become American Standard

### *Nineteen Standard Self-Holding Tapers to Replace Present Large Variety*

by

**Frederick S. Blackall, Jr.<sup>1</sup>**

*Chairman, Technical Committee 3  
Sectional Committee on Small Tools  
and Machine Tool Elements*

**W**ITH its approval by the American Standards Association in March, 1937, a new and simplified series of self-holding or "slow" tapers becomes available to American industry. This should ultimately make possible a high degree of interchangeability of machine fittings, accessories, and tools, thus widening the field which the manufacturer of taper shank tools can cover with a basic minimum stock, and reducing the inventories which the tool user will have to carry in his tool cribs.

The new self-holding taper series embraces 19 different tapers, ranging in size when measured at the large diameter or gage line from 0.239 in. to 12 in. This series is so designed as to serve every purpose now covered by perhaps half a dozen different systems which include 60 to 100 or more individual tapers. The annual saving in dollars and cents to industry, from the point of view of both manufacturer and consumer through the use of this simplified standard will be obvious.

Basically, the new taper series represents the adoption or adaptation of the best features of a number of the more widely used taper series already in existence. The new American Standard taper incorporates the following characteristics:

- (a). Brown & Sharpe tapers Nos. 1, 2, and 3, each with a taper of  $\frac{1}{4}$  in. per foot, but re-numbered according to the decimal diameter at the gage line, respectively, .239 in., .299 in., and .375 in.
- (b). Morse tapers Nos. 1, 2, 3, 4, and 5, with the taper per foot, as now correctly computed, rounded to three decimal places. These tapers will bear the original Morse numbers.
- (c). A new taper between No. 4 and No. 5, designated as No. 4½, based on a slope

of .623 in. per foot, with a diameter at the gage line of 1.500 in. This taper has the same slope as the Morse No. 4 and fills the long-felt gap between the 4 and 5 Morse tapers.

- (d). An entirely new series of tapers of large size, each with a slope of  $\frac{3}{4}$  in. to the foot, each designated by the number of tenths of an inch in the diameter at the gage line and ranging in size of the gage line diameter from 2 in. to 12 in.

The accompanying table sets forth the essential dimensions of the American Standard taper series and the origin of its three major divisions (see page 152).

The use of the taper fit for joining machine parts, or as a tool-holding or work-holding device, is a very old art. Probably the first step in an attempt to standardize taper dimensions was taken, however, by the Brown & Sharpe Manufacturing Company in 1860, when the well-known Brown & Sharpe series of taper standards was

<sup>1</sup>President and Treasurer, Taft-Peirce Manufacturing Company, Woonsocket, R. I.

proposed. These tapers had a slope of  $\frac{1}{2}$  in. per foot, measured on the diameter, and covered a range of from .2391 in. to well over 3 in. Shortly afterwards, in 1862, the Morse Twist Drill & Machine Company developed a series of eight tapers, each with a slope of approximately  $\frac{5}{8}$  in. to the foot.

The use of these two systems promptly became international, and the Morse series in particular had become so widely adopted by the time engineering standardization was launched as a national or international activity, that it appears to have become part and parcel of every international standard which has been developed either here or abroad.

### Errors Introduced

Unfortunately, however, at the time the Morse taper was originally proposed the accuracy attainable in manufacturing and measuring was so limited in the light of present-day practice that substantial errors were introduced in the taper per foot from the basic  $\frac{5}{8}$  in. standard. These errors have been perpetuated to this day, and undoubtedly account for the inconsistency which ap-

pears in the taper per foot among the eight tapers in the Morse series, as well as the variation which exists among the several Morse tables extant.

When the proposal to develop an American Standard for a self-holding taper series was first undertaken in 1926, it soon became apparent that the members of Technical Committee No. 3 on Machine Tapers, to whom this work was entrusted, were divided into two groups. The idealists held the opinion that the errors in the existing taper series should be corrected once and for all or eliminated altogether by the adoption of a new, uniform, and consistent taper series. The other group believed that among existing standards, the Morse series in particular had become a *de facto* standard which, however imperfect it might be, had to be recognized as the international standard.

It is reasonable to assume that this divergence of thought within the committee was typical of the views held in industry itself, since the membership of this committee and of its sponsor bodies was broadly representative of American industry, engineers, manufacturers of tools, and consumers. All were united in the belief that simplification—that is, a reduction in the num-

**American Standard Self-holding Tapers  
Basic, and Certain Calculated Dimensions**

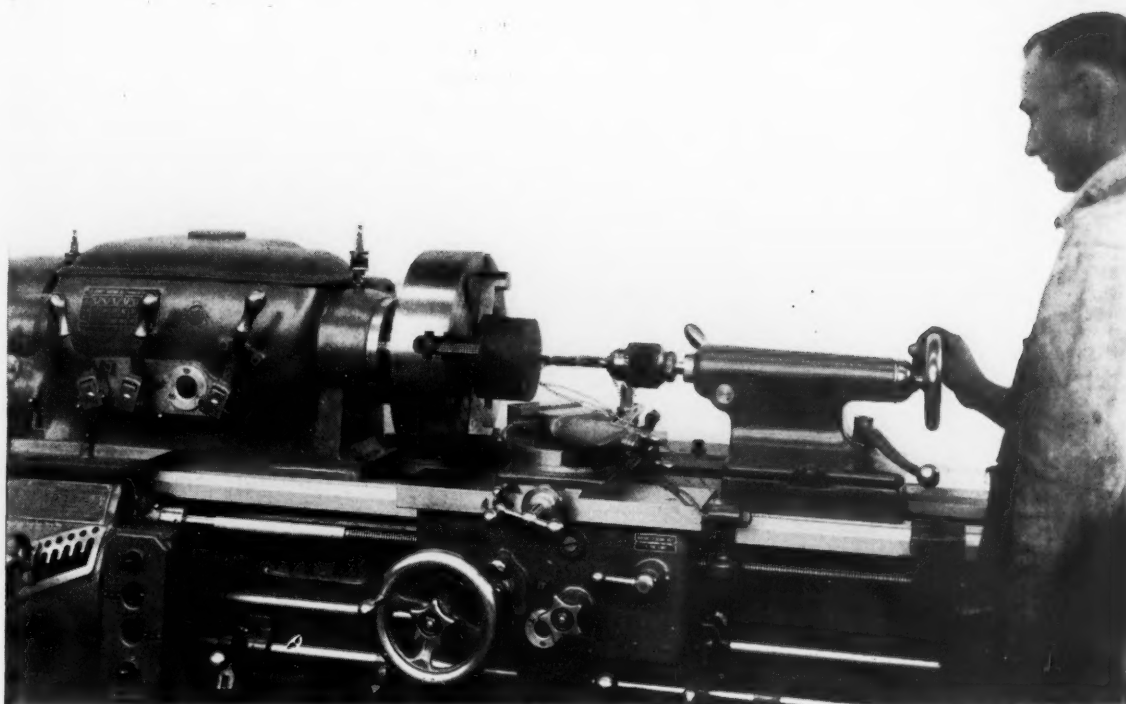
No. of Taper	Taper <sup>1</sup> per Foot	Diam- eter <sup>1</sup> at Gage Line	Diam- eter <sup>2</sup> at Small End	Length <sup>2</sup> Line to Small End	Means of Driving and Holding				Origin of Series
A	B	C	D	E					
.239	0.500	0.239	0.200	15/16	Tongue Drive with Shank Held in by Friction	Tongue Drive with Shank Held in by Key	Key Drive with Shank Held in by Key	Key Drive with Shank Held in by Draw- Bolt	Brown and Sharpe Taper Series
.299	0.500	0.299	0.250	1 3/16					Morse Taper Series
.375	0.500	0.375	0.312	1 1/2					Rounded to three Decimal Places
1	0.600	0.475	0.369	2 1/8					
2	0.600	0.700	0.571	2 9/16					
3	0.602	0.938	0.778	3 3/16					
4	0.623	1.231	1.020	4 1/16					
4½	0.623	1.500	1.266	4 1/2					
5	0.630	1.748	1.476	5 3/16					
200	0.750	2.000	1.703	4 3/4					
250	0.750	2.500	2.156	5 1/2					
300	0.750	3.000	2.609	6 1/4					
350	0.750	3.500	3.063	7					
400	0.750	4.000	3.516	7 3/4					
500	0.750	5.000	4.422	9 1/4					
600	0.750	6.000	5.328	10 3/4					
800	0.750	8.000	7.141	13 3/4					
1000	0.750	10.000	8.953	16 3/4					
1200	0.750	12.000	10.766	19 3/4					

All dimensions are given in inches.

<sup>1</sup>Taper per foot and diameter at gage line (columns B and C) are basic dimensions.

<sup>2</sup>Dimensions in column D are calculated to three decimal places from the basic dimensions and are for reference only.





*Courtesy Hendey Machine Co.*

***Application of standard machine taper to drill chuck, mounted on center arbor and inserted in tailstock spindle lathe in place of regular center. The detail of a lathe center is shown in the reproduction of the blue print on the front cover. (Courtesy Hendey Machine Company.)***

***The center picture on the front cover shows a large boring mill (courtesy Taft-Peirce Mfg. Co.). The new American Standard includes a  $\frac{3}{4}$  in. taper series ideally adapted to the requirements of heavy machine tools such as this.***

ber of existing standards—should be brought about; but the detailed application of the simplification procedure presented a difficult problem.

It is not surprising, then, that the standard as finally adopted represents a compromise, nor does it follow by any means that such a compromise is not highly desirable. Indeed, there was good reason for a compromise. The adoption of a radically different standard from those already in use for drills and reamers, for example, would, if it were to be effective, at once make obsolete machine-tool spindles throughout the world. More probably, the new and different standard would degenerate into a futile and theoretical gesture. And so the committee was undoubtedly wise in resisting the temptation to develop a new taper of its own choosing, in lieu of the well-established Morse series of tapers, Nos. 1 to 5, inclusive. The inclusion of the new American standard No.  $4\frac{1}{2}$  taper is a recognition of the well-known gap which exists in this part of the Morse series, and it appears to be sound

procedure to base the new  $4\frac{1}{2}$  taper on the Morse system as well, since it becomes substantially an integral part of it.

Adoption of the Brown & Sharpe 1, 2, and 3 tapers is a recognition of the better sticking or holding qualities of the  $\frac{1}{2}$  in. taper in small sizes, and, incidentally, eliminates the need of the Morse No. 0 taper, which has been dropped.

In the field of large tapers from 2 to 12 inches, inclusive, the committee had a better opportunity for original work. It did, however, borrow from the Sellers taper the  $\frac{3}{4}$  in. slope, which had been employed in the Seller series since 1862 although in a substantially smaller size range.

### ***Eliminate Jarno Series***

It is perhaps well to mention here that the committee gave thoughtful consideration to the Jarno taper series of six-tenths of an inch per foot, originally developed by O. J. Beale of the Brown & Sharpe Manufacturing Company in 1889.

As the Jarno was largely a duplication, as far as size range was concerned, of the Morse series, however, and as the latter was unquestionably in wider use, the elimination of the Jarno from final consideration seemed to be sound. This is a departure from the practice followed by the German and Swedish standardizing bodies in adopting a national standard composed of tapers chosen from the .6 and  $\frac{5}{8}$  in. series, the first of which is designated as the metric series, while the second is substantially the Morse taper.

Some specific advantages may be expected to accrue to industry from the widespread adoption of the new American Standard taper. The potential reduction in inventories of arbors, centers, drills, reamers, collets, and every other small tool item which depends on a taper fit for its use in machine-tool applications is tremendous. Stocks, both on the manufacturer's shelves and in the tool cribs of consumers, can be cut down enormously, and undoubtedly will be as time goes

on and the advantages of the new standard are widely recognized.

Take the simple matter of providing adapters and collets for the dressing of lathe, grinder, and other machine-tool centers. Currently, the well-equipped tool-dressing department must carry these in the Brown & Sharpe, Morse, and Jarno tapers, as well as perhaps two or three others. If machine-tool builders adopt universally the American Standard taper series, one set of collets and adapters will cover all machine tools.

Furthermore, publication of detail dimensions of the taper standard, developed by the National Machine Tool Builders' Association, the Society of Automotive Engineers, and the American Society of Mechanical Engineers as joint sponsors under the procedure of the American Standards Association will eliminate once and for all the eternal question as to just what does constitute the standard. For years, minor but frequently important variations have occurred between tables

### Technical Committee Prepares Machine Taper Standard

The widely representative technical committee representing manufacturers, users, and technical experts which prepared the American Standards for Machine Tapers (Self-Holding Series) was organized under the Sectional Committee on Standardization of Small Tools and Machine Tool Elements (B5) of the American Standards Association. The Society of Automotive Engineers, the National Machine Tool Builders' Association, and the American Society of Mechanical Engineers were jointly responsible for the administrative direction of the committee's work.

Members of this technical committee are:

- F. S. Blackall, Jr., president and treasurer, The Taft-Peirce Manufacturing Co., Woonsocket, R. I., *Chairman*
- J. B. Armitage, chief mechanical engineer, Kearney & Trecker Corporation, West Allis, Wisc.
- W. L. Barth, Standards Section, General Motors Corporation, Detroit, Mich.
- E. J. Bryant, manager, Gage and Reamer Depts., Greenfield Tap and Die Corp., Greenfield, Mass.
- Earle Buckingham, professor of mechanical engineering, Massachusetts Institute of Technology, Cambridge, Mass.
- F. H. Colvin, editor, *American Machinist*, McGraw-Hill Publishing Co., New York

- J. B. Dillard, general superintendent, Cleveland Twist Drill Co., Cleveland, Ohio
- T. F. Githens (alternative for Mr. Dillard), mechanical engineer, Cleveland Twist Drill Co., Cleveland, Ohio
- W. M. Gladding, works manager, Morse Twist Drill & Machine Co., New Bedford, Mass.
- B. P. Graves, director of design, Brown & Sharpe Mfg. Co., Providence, R. I.
- H. E. Harris, consulting engineer, 229 Thorne Street, Bridgeport, Conn.
- F. O. Hoagland, master mechanic, Pratt and Whitney Co., Hartford, Conn.
- J. H. Horigan, secretary and mechanical engineer, Union Twist Drill Co., Athol, Mass.
- A. H. Lyon, chief engineer, Ingersoll Milling Machine Co., Rockford, Ill.
- L. F. Nenninger, chief design engineer, Cincinnati Milling Machine Co., Oakley, Cincinnati, Ohio
- Officer-in-Charge, Bureau of Engineering Section, Navy Yard Division, U. S. Navy Department, Washington, D. C.
- Edwin J. Prindle, Senior Member, Prindle, Bean and Mann, New York, N. Y.
- C. W. Spicer, vice-president and chief engineer, Spicer Manufacturing Corp., Toledo, Ohio
- H. L. Taylor, supervisor, Tools and Machinery, Baltimore & Ohio Railroad Co., Baltimore, Md.
- W. A. Timm, Machinery Process and Equipment Standardization, Western Electric Company, Chicago, Ill.
- F. S. Walters, Supervisor, Small Tools and Supplies, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

Copies of the American Standard (B5.10-1937) are available at 50 cents each. Members of the ASA are entitled to 20 per cent discount when ordering copies through the ASA office.

published by various companies and agencies purporting to describe existing tapers, such as the Morse. The Morse Twist Drill & Machine Company itself formerly described the slope of its No. 2 taper as .602 in., but now lists it as .59941 in. Because of these differences, many of the drill companies have published their own standards, which, while having essentially the Morse taper, differ in minor respects from the original Morse or any of its many variations.

Approval of the new taper by the American Standards Association lends it an authenticity which was always lacking in the old taper standards.

### ***Represents Cooperative Effort***

It is reasonable to suppose, also, that the new standard will prove more useful than any of the old standards alone or any combination of them, because it represents the cooperative effort of American industry and may therefore be supposed to be tailor-made to its needs. It is unquestionably broader in scope than any existing taper series and is far simpler than any other combination of them. The detail dimensions, both for taper shanks and for the corresponding dimensions of taper sockets, have been developed to meet every condition under which these tapers will be used. These include the tongue drive with the shank retained by friction, the tongue drive with the shank retained by a key, the key drive with the shank retained by a key, and the key drive with the shank retained by a draw bolt.

Finally, the standard is supported by sound gaging technique which has been worked out in conjunction with it and has been published as a part of the standard. Thus users are given in the new standard not only correct dimensions to follow but also sound means of maintaining them. Indeed, even the nomenclature of tapers has been standardized in order to avoid any confusion or misunderstanding as to the character of the standard.

It is perhaps fitting in concluding this paper to make some comment on the character of the committee which developed the new standard and the general basis of its work. The Sectional Committee on the Standardization of Small Tools and Machine Tool Elements (B5) was organized in 1922 under the procedure of the American Standards Association and is sponsored jointly by the three organizations mentioned, with other national organizations officially cooperating. The importance of taper standardization was immediately recognized by this committee and the project was one of the first four to be undertaken. Technical Committee No. 3 on Machine Tapers was formed in 1926 under the chairmanship of Ernest F.

DuBrul, then general manager of the National Machine Tool Builders' Association. The author of this article succeeded Mr. DuBrul as chairman of the committee in 1932. The committee is broadly representative, its membership including 12 representatives of machine-tool or small-tool manufacturers, seven users, and three professional engineers.

In order further to insure that the committee's work should be attuned to industry's wants, questionnaires and drafts of the proposed tables were given wide circulation by mail in every case before any course of action was definitely decided.

Approximately 20 full meetings of the committee, as well as uncounted subcommittee meetings, were held throughout the decade from 1926 to 1936, when the standard was finally adopted by the committee. The lively interest in the development of a national taper standard was attested by the excellent attendance which characterized the meetings, including an unusually large proportion of visitors.

Incidentally, Technical Committee No. 3 is now at work on the development of a self-releasing or steep taper series as a complement to the self-holding taper, probably (although this is not yet assured) with a slope of  $3\frac{1}{2}$  in. per foot.

The New American Standard for Machine Tapers, Self-Holding Taper Series (B5.10-1937) is a 12-page booklet containing five tables of taper dimensions, two tables of plug and ring gage dimensions, and a glossary of nomenclature. Copies are available through the American Standards Association or any of the sponsor organizations at 50 cents each.

### **Propose Reduction in List of Hammer Sizes**

A reduction of seven per cent in the sizes now listed in the Simplified Practice Recommendation R159, Forged Hammers, amounting to a total reduction of 13 sizes, has been proposed by the standing committee in charge of the recommendation, according to an announcement by the Division of Simplified Practice of the National Bureau of Standards. Copies have been mailed to all interests for consideration and approval.

The original recommendation, proposed by the Hammer Division of the General Tool and Implement Association, and effective July 1, 1935, lists kinds, grades, styles, and weights of handled hammers for all purposes.

Mimeographed copies of the proposed revision may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

## A.S.T.M. Textile Committee Proposes Changes in Standards

Two new standard test methods for use by textile manufacturers and engineers, as well as by large testing laboratories, were recommended to the American Society for Testing Materials by its Committee D-13 on Textile Materials at its recent annual meeting. These test methods, which were recommended as tentative, cover wool felt and certain wool and part-wool fabrics.

Revisions were proposed in a number of standards previously approved, including:

- Standard General Methods of Testing and Tolerances for Cotton Yarns and Threads (D 180-36)
- Method of Estimating Hard Scoured Wool in Wool in the Grease (D 232-36)
- Methods of Testing and Tolerances for Woolen Yarns (D 403-36)
- Methods of Testing and Tolerances for Worsted Yarns (D 404-36)
- Methods of Test for Fineness of Wool (D 419-35 T)
- Methods of Testing Pile Floor Covering (D 418-36 T)
- Methods of Testing and Tolerances for Rayon (D 258-35 T)
- Definitions and Terms Relating to Textile Materials (D 123-36 T)

Three tentative standards have been used for some time and found acceptable and were recommended by the committee for advancement to standard. They are:

- Methods of Test for Small Amounts of Copper and Manganese in Textiles (D 377-36 T)
- Method of Test for Fastness of Dyed or Printed Cotton Fabrics to Laundering or Domestic Washing (D 435-36 T)
- Method of Test for Fastness of Dyed or Printed Silk or Rayon Fabrics to Laundering or Domestic Washing (D 436-36 T)

A variety of problems in manufacture, control of quality, and testing of textiles are included in the committee's program now under way. These include:

- New methods for cotton fiber properties
- Device for measuring yardage of yarn or thread in a package
- Evenness standards for yarn and thread
- Moisture regain of cotton yarns and thread
- Strength test of heavily plied yarns
- Methods for determining sizing in gray and finished fabrics
- Twist determination of yarns from fabrics
- Calibration of horizontal testing machines
- Methods of testing spun rayon fabrics for wrinkling, bagging and stretching
- Methods of wool sampling and for scouring wool
- Machine for determining wool staple
- Methods of identification of hair fibers
- Specifications for yarns spun from wool mixed with other fibers
- Machine-wear test standardization and correlation with floor-wear tests on pile floor coverings
- Chemical tests for color durability of pile floor covering
- Specifications for 10-mil asbestos tapes
- Test for electrical resistivity of asbestos textiles

- Definitions of terms relating to leaf and bast fibers
- Test methods for jute, fiber length and strength of jute yarns, and numbering of jute yarns
- Method of classification of textile fabrics
- Development of a scientific system of fabric nomenclature
- Specifications for sheetings
- Method of rating results of tests on woven dress fabrics
- Methods for analysis of textiles containing tussah silk and lanitol
- Specifications for bursting testers
- Rate of loading on constant specimen-rate-of-load type testing machines
- Methods of testing for water-resistance, fastness to light, acidity and alkalinity
- Statistical analysis of precision of standards

A Symposium on Testing Methods will be the feature of the committee's Fall Meeting October 20 to 22.

## International Testing Society To Give Advice on Standards

The International Association for Testing Materials will give technical advice on standardization problems but will not act on standards, it was stated at its Second International Congress, London, in April. Members of the Association are the national associations for testing materials in the various countries.

Many important technical problems on materials and tests were discussed at the Congress.

W. H. Fulweiler, vice-president of the International Association for Testing Materials, with headquarters at the American Society for Testing Materials, was in charge of American participation.

## New Organization Broadens Automotive Safety Program

The Automotive Safety Foundation has been organized by the automotive industry to place its traffic control and accident reduction program on a permanent basis. Through the foundation the motor-car industry expects to spend \$500,000 this year for promotion of the safe and efficient use of streets and highways, research into causes of street and highway accidents, and dissemination of information on the safe use of motor vehicles. The program will also include methods of preventing accidents and means of relieving congestion and facilitating traffic with safety.

Trustees of the foundation include motor-car manufacturers, parts and tire makers, and finance groups.

Paul G. Hoffman, head of the Studebaker Corporation, was elected president.



## American Standards Association, Approving Eleven A.S.T.M. Standards for Pigments, Recognizes Consensus of Producers and Users

# Standard Paint Specifications Give Industry Uniform Product

IT is a long road from the crude and dull earth colors which centuries ago formed the first pigments, to the present-day synthetic colors that rival the rainbow. Yet, curiously enough, although we can describe and specify quite closely the latest synthetic colors, we really cannot say fully and precisely what constitutes some of the earth colors. We, ourselves, have made the synthetics and know what we put into them, but Nature made the umbers and the siennas and did not record the formulas. Progress is being made, however. The necessity for correct and complete description of pigments and paints is obvious.

The small consumer may, with reason, confine his purchases of paint to well established varieties and mixtures as furnished by makers who, his experience shows, are successful in producing durable and otherwise satisfactory goods. This remains true, even though he pay a little higher price. The difference really represents, in part, the careful research and routine testing which the producer does for him. And even though an occasional lot is not up to the desired standard, the small consumer is reasonably well served.

### *Specifications Essential*

Not so the large consumer—a small difference in unit price multiplies to a considerable total on his larger purchases. A deficiency in quality likewise, by multiplication, becomes important with the larger use of the material. It is therefore necessary for him to describe in detail exactly what he wants—in short, to use a specification. Also it is essential that he test shipments to determine whether he receives what he specifies. Only thus can he be certain of the best material at the lowest price.

by

**H. E. Smith**

*Chairman, Subcommittee XV, Pigments, A.S.T.M. Committee D-1 on Paint, Varnish, Lacquer and Related Products*

Early in the study of paints by technologists the need appeared for accurate specifications for the pigments, which would enable the purchaser to buy uniform and satisfactory products in the open market from any competent manufacturer. The World War emphasized this need, especially for Federal Government departments. The railroads, also large consumers of paints and at that time under the jurisdiction of the U. S. Railroad Administration, were included. An Interdepartmental Committee was formed to write specifications for the needed paints and pigments. This committee later grew into the paint section of the Federal Specifications Board.

For industry in general the work was taken up by the American Society for Testing Materials. A subcommittee was formed to prepare specifications for the pigments and in 1921 it reported several specifications. These were adopted as tentative. They were based largely on those of the Interdepartmental Committee.

The specifications, which later became A.S.T.M. standards, have been revised from time to time to keep pace with the progress of the industry. Other specifications were in later years added to the list. The results represent the practical experience of both producers and consumers, both

of whom are included in the working subcommittee.

The pigments which were most largely used at the time were, naturally, the first to receive attention. Of those now offered to the American Standards Association, zinc oxide, basic carbonate white lead, red lead, and mineral iron oxide were first adopted as tentative in 1921. Chrome yellow and reduced chrome green were first issued in 1925 and the two blues, ultramarine and prussian, in 1927. All have been revised, as necessary, during the intervening years. The specifications

therefore represent extended study and experience.

The development of A.S.T.M. specifications for pigments has, incidentally, been the occasion for developing the manufacture of fine wire sieves or screens in the United States. Previous to the World War the 325-mesh sieves for testing the fineness of pigments were made by a factory in Alsace-Lorraine which was destroyed during the war. For a time, suitably fine sieves were not obtainable.

At the request of Government and A.S.T.M. technologists, American makers undertook the difficult task of producing wire and cloth of the required fineness and uniformity. That which is used for the specified 325-mesh sieve has wires only 0.0014 inch in diameter and the opening between the wires is only 0.0017 inch. In addition, the openings are required to be uniform within 8 per cent plus or minus. Pigments, all of whose particles are 0.0017 inch in diameter, would not be satisfactorily fine for good paint but in the process of grinding so that the required 97 to 99 per cent will pass the sieve, the large majority of particles are ground much finer, thus the desired result is obtained.

The white pigments represented by the above and other A.S.T.M. specifications are the base of practically all of the first-quality white and tinted paints. In the deeper colors there is a greater variety. Some are used in comparatively small quantities and have not yet reached the specification stage. The number of specification pigments is, however, constantly increasing. And, really, specifications may be desirable even for articles of small consumption. A small percentage of an incorrect or inferior component may do a large percentage of harm.

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Of the colored pigments, mineral iron oxide, lampblack, chrome yellow, chrome green, ultramarine blue, and prussian blue, now adopted by the American Standards Association, there are various grades and shades. The specifications are so drawn as to include all shades. With respect to grade or quality, they represent good and reliable commercial products.

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These eleven American Standard specifications are:

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- Commercial Para Red (ASA K31-1937; A.S.T.M. D 624-28)

Copies of the specifications are available from the American Standards Association, or from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia, Pa., at 25 cents each. ASA Members are entitled to 20 per cent discount on approved American Standards, when ordered through the ASA office.

All of the specifications under consideration define the material by the kinds, properties, and percentages of the essential components and by suitable limitations on the impurities, as required. Physical properties are also specified as needed. Occasionally, as in the case of red lead, more than one grade is included, thus giving the purchaser the opportunity of selecting the commercial products best suited to his needs.

### **Broad Membership**

The specification committees of the American Society for Testing Materials include in their memberships representatives of numerous large consumers, and it is reasonable, therefore, to expect that their specifications will be extensively used. This may be by direct reference, or, more frequently, by the use of practically the same requirements in the consumers' own specifications.

The Government departments buy largely on the specifications of the Federal Specifications Board, whose requirements for these pigments are similar to those of A.S.T.M.

The pigments which find large use in railroad

painting are few in number. The whites bought as such or as constituents of mixtures are very largely to A.S.T.M. standards, either by direct specification or frequently on account of the standards maintained by the paint maker. The purchase of colored pigments in large lots by railroads is limited to a few varieties. In some cases specifications on the A.S.T.M. basis are quoted directly; in others they come in through the makers' standards. Similar conditions exist among various other large purchasers.

The practice well merits extension. The adoption of the specifications by the American Standards Association is a long step in this direction. The use of the specifications as standards by the manufacturers is highly important because it gives to the small consumer who has no specification system nor testing laboratory the benefit of carefully studied standards. In the ultimate development, a retail purchaser should be able to purchase a gallon of paint of standard and good quality with the same convenience and confidence as he now buys a bag of certified fertilizer or a quart of Grade A milk.

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A simplified list of sizes of steel horizontal firebox heating boilers has been accepted as a Simplified Practice Recommendation R157-37 under the procedure of the Division of Simplified Practice, National Bureau of Standards.

The recommendation gives in the first table, 19 sizes of boilers for hand firing, ranging from 1,800 to 25,000 square feet of steam radiation, and from 2,880 to 56,000 square feet of water radiation; also 19 ratings of boilers for mechanical firing, ranging from 2,190 to 42,500 square feet of steam radiation, and from 3,500 to 68,000 square feet of water radiation. Table 1 also includes Btu per hour, heating surface, grate area, and furnace volume.

Table 2 shows sizes of outlets and number and size of safety valves for each size of boiler.

An Appendix, consisting essentially of explanatory material as set forth in the Steel Heating Boiler Institute Rating Code, is also included.

"In establishing standard sizes of boilers it is now possible for the manufacturers in our industry to make up stock during the slack season with reasonable assurance that this stock can be disposed of during the busy season," says R. A. Locke, manager of the Steel Heating Boiler Institute. "Prior to the establishment of these

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Physical characteristics of component materials, construction, fixtures, hardware, sizes, and labeling of venetian blinds of the free-hanging type for residence and office use are expected to be covered in the proposed standard.

of whom are included in the working sub-committee.

The pigments which were most largely used at the time were, naturally, the first to receive attention. Of those now offered to the American Standards Association, zinc oxide, basic carbonate white lead, red lead, and mineral iron oxide were first adopted as tentative in 1921. Chrome yellow and reduced chrome green were first issued in 1925 and the two blues, ultramarine and prussian, in 1927. All have been revised, as necessary, during the intervening years. The specifications

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## ASA Approves Requirements For Gas Water-Heating Units

**Most recent gas-appliance standard prepared under direction of American Gas Association brings number approved by American Standards Association to 26**

**T**HE first edition of listing standards for attachable gas water-heating units without water-carrying parts, sponsored by the American Gas Association, were accepted as American Standard by the American Standards Association on April 22, 1937.

The adoption of standards covering these new types of gas-using units is another milestone in the rapid progress of standardization within the gas appliance industry.

Attachable gas water-heating units covered by these standards consist primarily of the necessary materials, such as insulation, jacket, small gas burner and suitable controls, for conversion of an ordinary range boiler into a complete automatic storage gas water heater. The rated input to these units is relatively small, making their application equivalent to slow recovery types of automatic storage heaters. The thermostats used are either of the conventional type extending through the tank wall into the stored water, or of a type where the thermal element is placed in close contact with the outside of the tank shell.

### **Installation Requirements**

For the most part, the new American Standard Listing Requirements for Attachable Gas Water-Heating Units Without Water-Carrying Parts are identical with approval standards for complete storage gas water heaters. It is specified that the attachable unit shall be installed according to the manufacturer's instructions upon one of three commonly used sizes of extra-heavy range boilers, and then the whole assembly is tested as a storage water heater. The tank diameter and shell sheet height for which the unit is designed must be in-

dicated on its name plate. Distinctive model numbers are required for units, even where they are similar in every respect except for character or thickness of insulating material used.

In conformity with the gas water-heater approval standards, utmost safety and 70 per cent thermal efficiency are mandatory. The provisions for safe operation of these units are thorough, even to the extent of requiring that combustion of the gas be complete on small units with the draft hood removed and with a flat plate placed over the flue outlet. This provision is intended to safeguard the use of those units that are often installed in kitchens or living quarters without being connected to a chimney.

The Laboratories are now in a position to test and list attachable water heating units under these standards.

Printed copies of the standards (Z21.26-1937) may be secured upon application to the American Gas Association, 420 Lexington Avenue, New York City, American Gas Association Testing Laboratories, 1032 East 62nd Street, Cleveland, Ohio, or to the American Standards Association, 29 West 39th Street, New York City.

### **Proposes Standard Practice To Measure Sound Transmission**

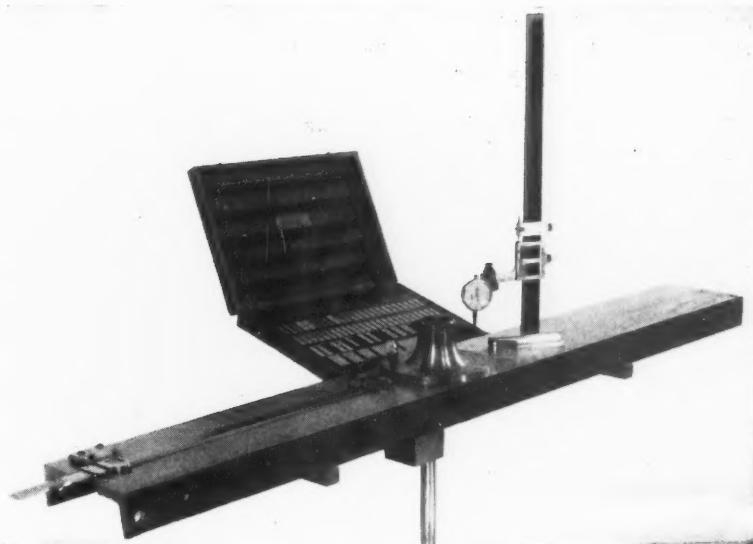
Proposed tentative standards for measuring sound transmission have been drafted by a subcommittee of the Sectional Committee on Acoustical Measurements and Terminology, and are now being circulated for comment and suggestions.

The draft presents proposed standard practice for measuring results of tests on the transmission of sound from air to air by way of intervening partitions.

Terminology, test conditions, test frequencies, specifications as to size and mounting of test panels, and the method of stating results are covered.

Copies of the draft are available from the American Standards Association.

*Precision equipment for length measurements, such as gage blocks, dial gages, etc., as shown in this picture, are being used by the National Bureau of Standards to determine the contours of nozzles*



*Courtesy National Bureau of Standards*

## Research to Give Data For Flow Nozzle Standards

**T**ESTS which will form the basis of a research program to determine whether long-radius nozzles used by American industry or shorter nozzles recommended by the International Standards Association are most effective in measuring the flow of fluids are now being carried out by the National Bureau of Standards. Because the tests must cover a wide range of conditions, the experiments will be performed in the engineering laboratories of seven universities as well as at the Bureau.

Definite knowledge about the operation of flow nozzles became essential with the development of power test codes, which require definite specifications for design, method of use, and proper numerical factor for nozzles used in acceptance tests involving fluid measurements. Very little definite information has been available up to the present time, except in the international recommendations.

For several years American industry has co-operated through the American Standards Association in the work of a technical committee on Flow Measurement of the International Standards Association. The American representative on this ISA committee, W. A. Carter, Detroit Edison Company, attended a meeting on the subject in 1932 at Stockholm. As a result of this committee's work, based on extensive European tests, the

International Standards Association recently published tentative Rules for Measuring the Flow of Fluids by Means of Nozzles and Orifice Plates (ISA Bulletins No. 9 and 12).

These ISA tentative recommendations vary from the most commonly adopted practice in the United States in that the proposed ISA nozzles are much shorter than those used in this country, and the method of mounting them in the pipe line is different.

### *Request Research*

For this reason, most of the American manufacturers and users of flow nozzles were opposed to the adoption of the tentative ISA recommendations until experiments and tests should prove that the shorter nozzles are definitely superior to the longer ones. In this connection, therefore, the Main Power Test Code Committee of the American Society of Mechanical Engineers requested the Special Research Committee on Fluid Meters to carry out a research program on flow-nozzles, particularly of the long-radius type.

The Fluid Meters Committee decided to undertake the work, and appointed a subcommittee which designed the long-radius nozzles to be used in the tests, combining two designs previously

used. Throat diameters of the test nozzles range from  $\frac{1}{4}$  inch to 13 inches. About 30 of these nozzles have already been manufactured, and more will be made.

It was found that making nozzles exactly to a mathematically specified shape, particularly when they are manufactured by different firms, requires a check on the contours of the nozzles, and that contour measurements should be available as a basis for comparison of manufacturing processes and in correlating and interpreting the data obtained by the testing laboratories.

An apparatus for measuring the nozzles has, therefore, been developed at the National Bureau of Standards. It consists of a surface plate with an upright plug of adjustable height. The nozzle

is placed over this plug on its upstream flange surface, and is moved from side to side diametrically. By observing the horizontal displacement and adding the known diameter of the plug and a correction for the curvature of the plug corner, the diameter of the nozzle is determined at any section desired.

Test data on five nozzles already obtained from four laboratories have been found to be in close agreement. It is expected that additional tests will be made at industrial plants.

When the tests have been completed the results will be reported to the Special Research Committee on Fluid Meters to assist in further research on flow nozzles and may be used as a basis for standards.

## Standard Zinc-Coated Pipe Gives Longer Service

**T**HE insistence of users of zinc-coated pipe that a heavy coating of zinc, such as that specified in American Standard G8.7-1937, is necessary to insure long life for this type of pipe has been substantiated by recent investigations of the National Bureau of Standards.

For a number of years prior to 1934 zinc-coated steel pipe was customarily furnished with a light coating for ordinary purposes, because the specifications of the American Society for Testing Materials for this type of pipe did not include definite requirements for weight of coating. In 1934, the A.S.T.M. specifications A 120 were revised to provide weight of zinc coating of not less than two ounces per square foot of total coated surface. In this form the specifications were approved by the American Standards Association as American Tentative Standard G8.7-1935. This tentative standard was advanced by the A.S.T.M. to the status of standard, and has now been advanced to American Standard G8.7-1937 by the American Standards Association.

The conclusions of the investigations of the National Bureau of Standards are that these heavier zinc-coatings are superior to thin ones for long periods of service and that galvanized steel loses weight at rates from one-half to one-fifth of the rate of loss of bar steel over a ten-year period. The Bureau's study indicates that the type of ferrous metal to which the zinc is applied does not have a marked effect on the rate of corrosion of galvanized materials during the first ten years of exposure. Further, the rate of corrosion of galvanized steel varies with the character of the material exposed to the soil. Corrosion is higher when zinc alone is exposed than

when the alloy layer is exposed and highest after much of the alloy layer is destroyed.

The Bureau's study with respect to the lead coatings is summarized in the following conclusion:

Lead is sufficiently corrodible in most soils to result in the penetration of lead coatings of the thickness now used within ten years. After the lead has been punctured, accelerated corrosion may occur because of the differences of potential between lead and steel.

Latest results of the Bureau's study of metallic pipe coatings are given in Research Paper 982, reprints of which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. at 10 cents each.

## Number of Hatchet Sizes Reduced in Proposed List

A reduction of 15 sizes, amounting to 11 per cent of the sizes now listed in Simplified Practice Recommendation R160, Forged Hatchets, has been proposed by the standing committee as a revision to the recommendation. Copies of the revision have been mailed to all interests for consideration and approval.

The original recommendation, proposed by the Hatchet Division of the General Tool and Implement Association, lists grades, kinds, and sizes of handled hatchets for all purposes.

Mimeographed copies of the proposed revision may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.



# Building Codes Use American Standards

by

**J. H. Courtney<sup>1</sup>**

*Secretary, Building Code  
Correlating Committee*

***Chart shows how ASA engineering projects in related fields apply to work on building codes***

**A**MERICAN STANDARDS in the several engineering fields have been widely used in building regulations. In some instances the standard as a whole has been written into the building code; in others, the standard has been cited as an example of generally accepted good practice recommendations. The Safety Code for Elevators, Escalators and Dumbwaiters, the National Electrical Code, and the Fire Test of Building Construction and Material are prominent examples of American Standards which have had wide acceptance. Many others—approved standards and ASA projects—are closely related to building regulation, although the relationship may perhaps not be so easily recognized.

## ***Eliminates Duplication***

The Building Code Correlating Committee, supervising the ASA building code standardization program, plans to make full use of these standards and specifications developed by ASA sectional committees in related fields. In this way it is expected that duplication of effort will be avoided and the BCCC will be able to give its attention to subjects not fully explored by existing committees.

The chart shown on the following pages presents a picture of ASA activities related to building regulation. It is expected to help the Building Code Correlating Committee in coordinating the building code program by showing the interrelationship of the various projects.

The 16 chapters shown in the left-hand column of the chart represent a logical and systematic arrangement of a building code as recommended by the Building Code Correlating Committee. The numbers indicate the proper position of the chapters in a complete code, but in order to show the relationship of the projects to each other on the

chart it has been necessary to list the chapters in other than numerical order. The subjects listed are all included in projects and standards under ASA procedure or are to be covered by sectional committees under the supervision of the BCCC.

The second column gives a list of projects thus far considered by the BCCC for development. The relation of these projects to the code chapters is indicated by the connecting lines. Projects to which symbols have been assigned (A51, for example) have been authorized by Standards Council and organization of sectional committees to deal with these projects is well under way.

Other ASA projects and American Standards pertaining to building codes are shown in the two right-hand columns. Their relation to the BCCC projects and to the various code chapters is indicated by the connecting lines.

Certain projects because of their breadth of scope pertain to more than one chapter and are therefore repeated where necessary. The Safety Code for Grandstands (Z20), for example, includes in its scope stability, strength, exits, fire hazards, and fire-fighting equipment for both permanent and temporary stands. These are matters which pertain to several chapters of a building code, and it is necessary that the committees dealing with these various chapters recognize this relationship in order that there may be no conflict in the several recommendations.

## ***Coordinates Work***

The relation of certain standards and projects to the building code program may not be readily apparent in some instances. An examination of the scope of the project or the content of the standard, however, often discloses a direct bearing on the building code work. Much time and effort may thus be saved on the part of one committee by having available the results of another committee's work along similar lines.

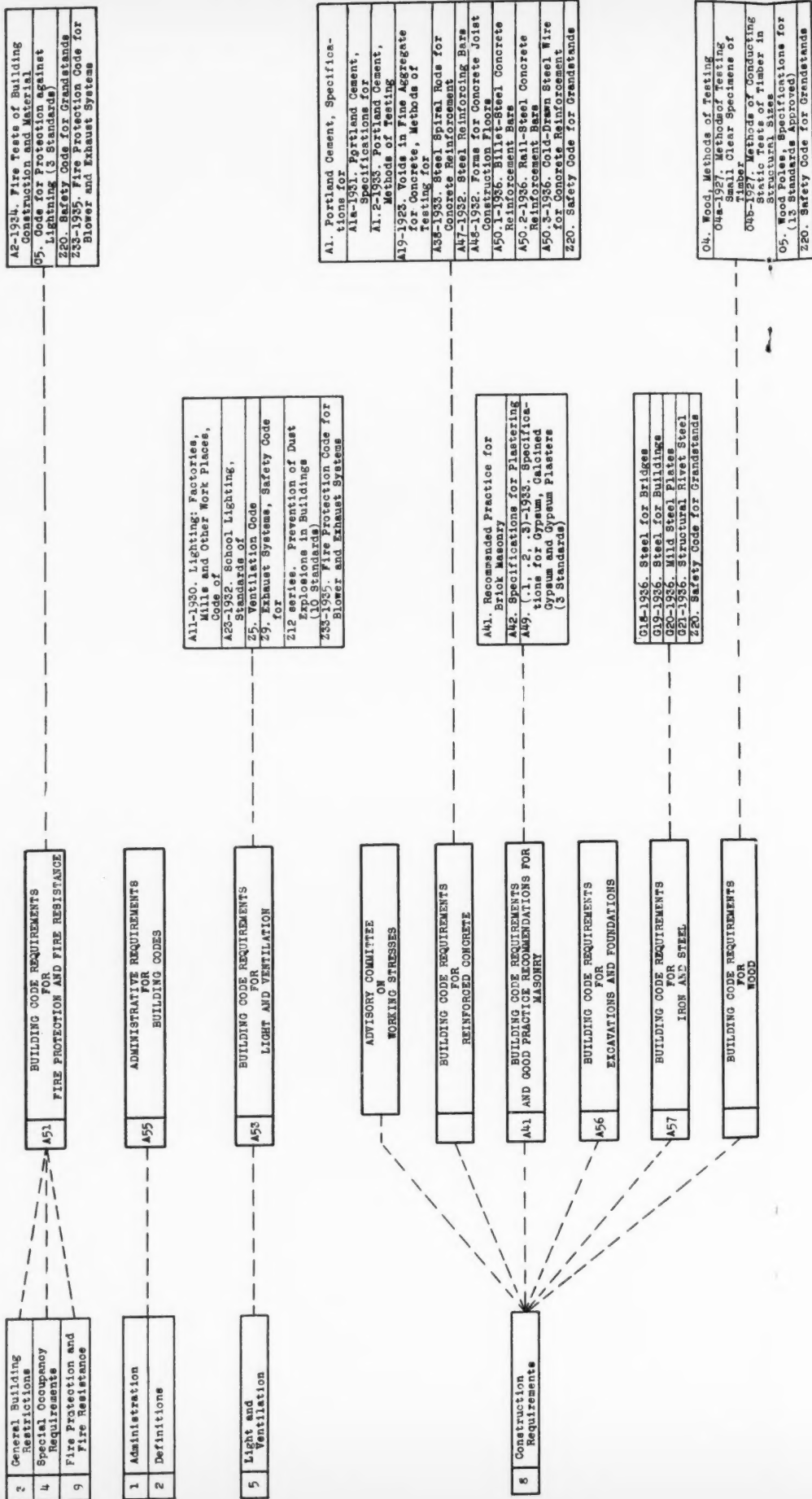
<sup>1</sup>American Standards Association

# ASA Projects Relating to Building Code Work

Projects  
Under Supervision of  
Building Code Correlating  
Committee

Other ASA Projects and Standards  
Relating to Building Code Work

Code Chapters



04B-1927, Methods of Conducting Tests to Determine Fiber in Structural Sizes
05. Wood Poles, Specifications for (13 Standards Approved)
220. Safety Code for Grandstands

11 Fire Extinguishing Equipment

A54

BUILDING CODE REQUIREMENTS  
FOR  
FIRE EXTINGUISHING EQUIPMENT

B16g-1929. Cast Iron Long Turn Sprinkler Fittings
B26-1925. Fire Hose Coupling Screw Threads
L3-1935. Specifications for Cotton Rubber-Lined Fire Hose for Public and Private Fire Department Use
220. Safety Code for Grandstands

10 Chimneys and Heating Appliances

A52

BUILDING CODE REQUIREMENTS  
FOR  
CHIMNEYS AND HEATING APPLIANCES

221. Approval and Installation Requirements for Gas Burning Appliances (24 Standards Approved)
227-1933. Piping and Fittings for City Gas
K2-1927. Gas Safety Code.

6 Means of Egress

A9-1935. Building Exit Code
A22. Safety Code for Walkway Surfaces
220. Safety Code for Grandstands

7 Loads

13 Signs and Billboards

A10-1934. Safety in the Construction Industry (A.C.C. Manual)
A12-1932. Floor and Wall Openings, Railings and Toe Boards, Safety Code for
A14-1935. Ladders, Safety Code for
A17-1931. Safety Code for Use of the Construction Care and Use of Scaffolding, Scaffolding and Scaffolding
A39-1933. Window Cleaning, Safety Code for
B30. Cranes, Derricks and Hoists, Safety Code for
228. Work in Compressed Air

12 Precautions During Building Operations

A21. Cast Iron Pipe and Special Castings, Specifications for
A40. Minimum Requirements for Piping and Standardization
A40.1-1935. Cast Iron Soil Pipe and Fittings
A40.2-1936. Brass Fittings for Flared Copper Tubes
B9-1933. Mechanical Refrigeration, Safety Code for
K2-1927. Gas Safety Code
24. Safety Code for Industrial Sanitation
24.1-1935. Safety Code for Industrial Sanitation in Manufacturing Establishments
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16 Plumbing

15 Elevators

A17-1931. Safety Code for Elevators, Escalators and Handbooks
A17a. Elevator Inspectors' Handbook

14 Electrical

C1-1935. National Electrical Code
C2-1927. National Electrical Safety Code
C5. Code for Protection Against Lightning (3 Standards)

Note: Projects to which symbols have been assigned have been authorized by Standards Council.

Note: Standards are indicated by project symbol followed by year of latest action; viz. 1935. Where no year is given, the standard is given without other notations, there has been in general no American Standard adopted.

## Consumer Work Shows Progress

**P**ROGRESS toward definite recommendations as the basis for standards on shoes, sheets, bedding, upholstery, hosiery, and definitions of terms was indicated by subcommittees of the ASA Advisory Committee on Ultimate Consumer Goods at the committee's meeting in May.

Three new projects have been recommended to the American Standards Association for development of standards—on standard definitions of terms used in retailing, standards for terms to indicate quality or grades of commodities, and standardization of sizes of children's garments. These proposed projects are being considered by the ASA Standards Council. If the Council approves, sectional committees representing manufacturers and producers, retailers, and consumers will be organized to prepare the standards.

As a result of the findings of its bedding and upholstery subcommittee, the Advisory Committee voted to recommend that the American Standards Association authorize a project on bedding and upholstery to assure sanitary filling materials and accurate information. A digest of available material to help in working out requirements for such labels is being prepared.

The Committee voted to go on record as favoring standards of construction, labeling, and inspection of women's full-fashioned hosiery, such as those formulated by the National Association of Hosiery Manufacturers. It recommended, however, that a provision for labeling Grade "A" (first grade) hosiery should be included in this standard.

The subcommittee on shoes, as the result of its

### ASA Committee Coordinates Consumer Goods Standards

The Advisory Committee on Ultimate Consumer Goods of the American Standards Association, coordinating the Association's work on consumer standards, is made up of representatives of retailer and consumer groups. It is the first permanent organization on which retailers and consumers have come together on a common basis to discuss their viewpoints and iron out differences of opinion during the development of standards.

Members of the committee are:

**H. W. Brightman**, chairman, Merchandising Division, National Retail Dry Goods Association, and vice-president in charge of merchandising, **L. Bamberger & Co.**, Newark, N. J., *Chairman*

**Ruth O'Brien**, chief, Division of Textiles and Clothing, U. S. Bureau of Home

### Economics, Washington, D. C., *Vice-Chairman*

American Association of University Women, **Dr. Faith Williams**, **Dr. Elizabeth May** (alt.)

American Home Economics Association, **Ruth O'Brien**, **Mrs. Millicent Taylor** (alt.)

General Federation of Women's Clubs, **Mrs. Josephine J. Doggett**

National Association of Purchasing Agents, **G. A. Renard**, **G. M. Tisdale** (alt.)

National Congress of Parents and Teachers, **Flurence Fallgatter**, **Ruth A. Bottomly** (alt.)

National League of Women Voters, **Mrs. Louise G. Baldwin**, **Mrs. Beatrice Pitney Lamb** (alt.)

National Retail Dry Goods Association, **F. W. Binzen**, **C. W. Dorn** (alt.), **Robert Blum**, **C. S. Pierce** (alt.), **H. W. Brightman**, **Ephraim Freedman** (alt.), **Arthur G. Kaufman**, **Saul Weinberg** (alt.), **J. P. Margeson**, **D. M. Nelson**, **Joseph Givner** (alt.), **Irwin D. Wolf**, **Dr. Jules LaBarthe, Jr.**, **T. L. Blanke** (alt.)

U. S. Department of Agriculture, Bureau of Home Economics, **Dr. Louise Stanley**, **Dr. Day Monroe** (alt.)

U. S. Department of Commerce—National Bureau of Standards, **Dr. A. S. McAllister**, **I. J. Fairchild** (alt.)

U. S. Department of Labor—Consumer's Project, **S. P. Kaidanovsky**

Members-at-Large, **Mrs. Blanche W. Hendrickson**, **Mrs. Pauline Berry Mack**, **Dr. Paul Nystrom**



study, recommended that information about the fit of shoes might be prepared by the Bureau of Home Economics of the U. S. Department of Agriculture, and the Consumers' Project of the U. S. Department of Labor, for use by consumers and retail store salesmen. Such information might include a report on the efficiency of the X-ray machine for fitting, the subcommittee indicated. It was also suggested that the work of the National Bureau of Standards' Leather Laboratory might be useful in setting up minimum requirements and classification of leathers for air permeability and moisture. The Advisory Committee authorized the subcommittee to continue its study on shoes and to include consideration of shoe soles, terminology, and leather grading.

The subcommittee on sheets is working on recommendations for different classes of sheets and expects to make a recommendation at the next meeting of the Advisory Committee.

Any recommendations accepted by the Advisory Committee will, if approved by the ASA Standards Council, be submitted to sectional committees for development into standards. Sectional committees organized under the ASA include representatives of manufacturers, and producers, as well as retailers and consumers concerned with the standard under consideration. Standards developed by sectional committees, when approved by the Standards Council of the American Standards Association, are recognized as national standards.

## How Consumer Standards Fit into ASA's Program

by  
**P. G. Agnew**

*Secretary, American Standards Association*

**The organization of the Advisory Committee on Ultimate Consumer Goods and its relation to the general work of the American Standards Association is described in this article, reprinted from *Retailing*, May 17**

AST September representatives of consumer groups numbering well into the millions met with a small group of leading retailers the offices of the American Standards Association to discuss standards for consumer goods. This was the first meeting of the Advisory Committee on Ultimate Consumer Goods—a planning committee to guide, encourage, and supervise the development of consumer standards. It is an interesting fact that this marked the first time the stores, through a national organization, have sat down with their organized consumer representatives for a systematic study of the subject of standards in retail trade.

The organization of the Committee was brought about by consumer demand for standards which

has resulted in closer attention to this subject on the part of commercial interests. This is especially true of the large retailers, many of whom see in this program a new technique for increasing public confidence in their merchandise.

This Advisory Committee has met five times since September. During these months it has laid the foundation for undertakings at least three of which go deeply into the question of consumer-retailer relations.

The first of these calls for the development of a dictionary of the terms used in retailing to describe various types of merchandise. The undertaking was brought to the Committee by the National Retail Dry Goods Association, which has had the subject under consideration for some time

and is planning to do extensive work on it. The completed job is intended to accomplish for the broad field of retailing what definitions in the fur trade have done to clear up the extremely confused situation which existed a few years ago in that industry. Success in this project will depend to a large extent on the cooperation of manufacturing associations, of retailers through their store laboratories, and of other interested groups. The completed dictionary can be used effectively by department store buyers, and by store personnel managers in the training of clerks. It will provide the copywriter with a language common to every branch of retailing; and it will provide testing laboratories with non-technical terms in which to couch their reports on merchandise. Furthermore the National Retail Dry Goods Association plans to issue a simplified edition for consumers, similar to the one now in use in England.

### ***To Measure 100,000 Children***

A second project in which leadership is being taken by the U. S. Bureau of Home Economics, involves the actual measurement of some 100,000 children. It looks toward the standardization of children's clothing sizes from 1 to 14. Despite all that has been said and done on this subject, the shopper still faces a maze of uncoordinated and misleading size ranges and further wide variations depending on manufacturer, retailer, material and price of the goods offered for sale.

Of all the projects discussed in the Committee so far, the one which has proved to be of most urgent interest to retailers is the setting up of a valid certification system, which will provide a standard procedure, based on sound technical investigations, to be followed by retailer, manufacturer and advertiser, in certifying commodities to the public. It should do much to raise the level of reliability of "approval", "certification", and "listing" systems which are of great potential value to responsible producers and distributors, as well as to consumers; but whose value is being dissipated by irresponsible endorsements.

### ***How the American Standards Association Entered the Consumer Field***

To fully understand the plan, purpose and methods of the Advisory Committee, it is necessary to go back into the national standardization work that has been carried on through the American Standards Association since the Association was organized in 1918 by five engineering societies to serve as a national clearing house for standardization work. By far the greater part of the

early work has dealt with problems of producer goods. Standards have been developed for fits of mechanical parts, for sizes of screws, nuts, bolts; for strengths of steel bars and of building materials; for electrical machinery; and for nearly four hundred other matters in a wide industrial field. There has also been a program of industrial safety codes which today is serving as the basis of most state regulations for industrial workers.

### ***Proposed in 1928***

When the U. S. Bureau of Home Economics and the American Home Economics Association first broached the matter of consumer standards in 1928, the American Standards Association had already had extensive experience, in coordinating the points of view of various groups, and it had developed the machinery for a thorough and impartial standardization movement. Furthermore, it had the confidence of some 300 national organizations which were cooperating in the work.

Consumer groups among the membership believed that the ASA machinery was uniquely fitted to do the kind of a job for consumers that it had already done for other groups.

The first jobs to be undertaken in the consumer field were projects on refrigerators and on sheets. Other early work included Methods of Testing the Shrinkage of Cotton Cloth, Tests for Woven Textile Fabrics, and standards for gas burning appliances. Some of these early undertakings, notably the last two, resulted in successful standards. On the whole, however, the program was not as successful as we had hoped it would be. I believe this was because, at the time, the Association had no members among the organized retail groups, and it was difficult to secure the active cooperation which was necessary to bridge the gap between consumers and manufacturers. Conditions are now changed through the fact that the National Retail Dry Goods Association is taking active and energetic leadership in the whole program.

The development of standard specifications for sheets and sheeting was one of the early projects that failed, although recommendations drawn up at the time by the committee in charge are today being used successfully in mail order catalogs and by important department stores.

The most active and successful of ASA consumer projects has been in the field of Approval and Installation Requirements for Gas Burning Appliances. Twenty-six such standards have been approved, and there are others before the Association at the moment. The work, including as it does, standards for gas ranges, water heaters, fur-

**American Standard tests for gas appliances — a successful standards program for consumer goods**

*Tests which gas appliances must meet for approval by the American Gas Association are developed by a sectional committee and submitted to the American Standards Association. This gas heater is being tested to determine how it resists chimney drafts.*



*Courtesy American Gas Association*

naces, clothes dryers, and other widely used conveniences of the American home, has exerted a real influence on consumer buying. It has also proved an important factor in the improvement of the great majority of gas appliances now sold—in fact in less than two years it led to the re-design of every gas-fired hot-water heater on the market. Today ninety percent of all appliances made in this country conform to these standards, and consumer satisfaction has led to an increase in sales all along the line. Furthermore, as a result of these standards and the accompanying improvement in products, the industry is no longer pestered by restrictive local ordinances. In this work the leadership has been taken throughout by the American Gas Association which maintains a fine research laboratory. The whole testing and labeling program through which these standards are policed is also administered by the American Gas Association.

Other American Standards of interest to individual consumers deal with methods of testing cotton cloth, the safety side of radio receiving devices, specifications for shrinkage, refrigerators, dry cells and batteries, gold-filled and gold-plated articles, and mattresses. The last two of these originated as Commercial Standards of the National Bureau of Standards.

The American Standards Association has a close and intimate relationship with the National Bureau of Standards, which has placed its facilities and the experience of a great corps of technical experts freely at the call of ASA committees.

According to the general method followed in the work of the American Standards Association

each undertaking is in the hands of a committee upon which all interested groups are represented through their national organizations. In the field of consumers' goods these will ordinarily include manufacturers, retailers, consumers, and interested bureaus of the Federal government.

### ***The Advisory Committee***

This committee is under the chairmanship of Harold W. Brightman, vice-president of L. Bamberger and Co. and chairman of the Merchandising Division of the National Retail Dry Goods Association; and the vice-chairmanship of Ruth O'Brien of the U. S. Bureau of Home Economics. It brings together the principal consumer and retailing groups. It will coordinate the work on consumer standards under the ASA, making recommendations from the distributor and consumer point of view on proposed standards. On it sit the chief merchandising executives of seven great retail establishments, accredited representatives of consumer groups with a combined membership of several millions, and representatives of interested Departments of the Federal government. It has been found impractical to include manufacturers on this committee, because manufacturers are chiefly interested in a specific standard rather than in broad aspects of the consumer question, and any sort of adequate representation of their interests would have made the committee too unwieldy to operate. In the development of all standards, however, manufacturers will be fully represented, as will every other group that has an interest in the standard under consideration.

Representatives of the following consumer and

governmental organizations are members of the committee:

American Association of University Women  
 American Home Economics Association  
 Bureau of Home Economics, U. S. Department of Agriculture  
 Consumers Project, U. S. Department of Labor  
 General Federation of Women's Clubs  
 National Association of Purchasing Agents  
 National Bureau of Standards, U. S. Department of Commerce  
 National Congress of Parents and Teachers  
 National League of Women Voters

The Committee itself will not develop standards. It is purely a planning committee to supervise the ASA technical committees in charge of specific projects in the consumer field. Surveys have already been started to investigate existing standards and the need for revision or for further standardization in a number of fields. Active subcommittees on hosiery, bedding and upholstery; on electrical refrigerators; on shoes; on color permanence; and on shrinkage and sheets have already brought preliminary reports to the committee with recommendations for action.

It is the consumer groups who have initiated

this work in the American Standards Association. Its real effectiveness is being made possible through the whole-hearted cooperation of these groups and of the National Retail Dry Goods Association which became a member of the ASA last winter. The success of every undertaking, however, requires the full cooperation of the manufacturing group concerned, through its trade association.

I am somewhat concerned about the volume of publicity that has attended the work, lest store executives be led to expect the impossible. The development of a national standard is a far different matter from a standard practice in a single establishment. Each national standard requires a common understanding on the part of a number of national groups. This cannot be arrived at over-night.

Whether the work will succeed is too early to predict. But to those who have watched its slow and precarious growth during the last dozen years, the rapidly developing interest in it now shown by consumer and retailer groups is astonishing.

## Government Specifications— Pioneer Consumer Standards

by

**Lyman J. Briggs**

*Director, National Bureau  
of Standards*

**What the government's experience shows to be essential in standard specifications and how this experience can help the Advisory Committee on Ultimate Consumer Goods was described at the May 7 meeting of the committee by Dr. Lyman J. Briggs, Director of the National Bureau of Standards**

**I**F the contacts which the National Bureau of Standards has had with consumer groups may be used as a fair criterion, the attitude of consumers regarding what would be most helpful to them in their purchases has changed during recent years. Formerly these consumers were urging

that lists of products be established, with the various brands of goods in each list arranged in order of excellence. They wanted to know which was the best product.

This viewpoint now seems to be changing to one that visualizes the need for standards of qual-



ity. In other words, the ultimate consumer is now beginning to see that his requirements can best be met by classifying the products in a particular group into grades, each grade standing for specific requirements as to quality. To meet this need consumer specifications with a nationally-recognized standing are necessary.

The National Bureau of Standards has had a good deal of experience with consumer specifications. The Federal government is the largest single purchaser of consumer goods in this country. Its purchases are made on the basis of Federal specifications, of which there are over 1,100 now in use. These specifications are prepared by some 80 interdepartmental committees made up of technical men drawn from all branches of the Government working under the general direction of the Federal Specifications Executive Committee.

### ***Changed Frequently***

In reviewing the specifications as they come from these technical committees, it is interesting to observe how often the action relates to the revision of some existing specification. In other words purchase specifications are not static in character, but change frequently to take advantage of improvement in the quality of products, or even to initiate such improvement. These revisions result in a steady movement forward toward products of better quality, which through the competition afforded by the specification are usually secured at no increase in price.

Anyone is entitled to bid on Federal supplies. The competition is open. The principal requirement is that the products supplied shall meet the requirements of the purchase specification. To insure this, the Federal Government tests the goods when they are delivered to make sure that the requirements have been met. Inasmuch as a large part of the Federal purchases (excluding foods) are tested at the National Bureau of Standards, the Bureau has had an unusual opportunity to observe how buying under specifications works out in practice.

This experience has shown that in order for a specification to be satisfactory it must itself have certain qualities.

(1). It must be definite in character. It must be free from clauses which require an expression of opinion by the inspector.

(2). It must be limited to the essential qualities of the product under consideration. The specification of unessential qualities may increase the cost of the product and certainly increases the time required for testing.

(3). The specified qualities must all be capable of measurement.



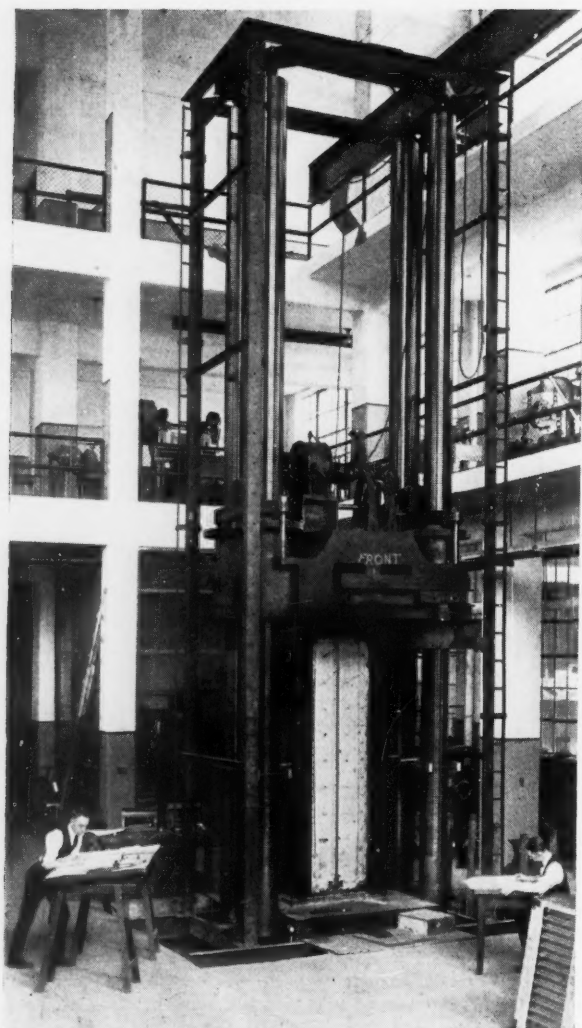
*Courtesy National Bureau of Standards*

***Before the Government's purchasing department orders materials for Post-Office floors, the National Bureau of Standards runs this machine over samples of different types of floor coverings to determine comparative wearing qualities***

(4). The specification must be supported by definite test methods so that no quibble may arise regarding the way in which the tests are to be carried out.

It will be seen from this that a satisfactory specification is not an easy thing to prepare. The really essential qualities of a product cannot be determined from mere inspection. This requires laboratory research which sometimes involves months or even years of work.

The methods used in testing must be developed with equal care. Accelerated service tests are necessary in many instances, which is one of the most difficult phases of commodity testing. Experience only can determine whether an accelerated service test carried out in a few days in the laboratory actually represents with sufficient fidelity years of exposure to sunlight and rain, or the



***The National Bureau of Standards' tests cover a wide variety of subjects — from shrinkage and light resistance of textiles to compression tests for steel and iron. This 10,000,000 pound machine is testing a metal column.***

ravages of wear. Some of the accelerated service tests are satisfactory, but much remains to be done. The experience of the Bureau of Standards in this field is available in the preparation of specifications for the ultimate consumer.

Under the Government's system of purchasing through specifications, the award is usually made to the lowest bidder. If the goods which he delivers meet the requirements of the specification, this closes the transaction and no examination is made of competing products.

It is evident that under this procedure, the Na-

tional Bureau of Standards seldom has in its possession information relating to an entire line of competing products. Such a procedure would increase the cost of the testing work enormously.

The cost of testing becomes in fact a serious problem in any plan for the centralized testing of consumer goods.

A more promising solution is the labelling plan, whereby a manufacturer guarantees that his product conforms with a nationally recognized specification referred to in the label, and tests his product repeatedly during manufacturing operations to assure himself that the specification is being met. Goods marketed under this plan would come under the supervision of the Federal Trade Commission, and such further tests as the Commission might find necessary could then be carried out by some designated Federal agency.

The ultimate consumer is not familiar with specifications and he needs the help of responsible consumer groups in distinguishing between specifications which give him protection and those which do not. A real danger to the whole movement lies in guarantees based on specifications which are misleading and meaningless. Nationally recognized specifications that have withstood the test of service should be used whenever possible.

The Federal Government has found it advantageous and helpful to invite the comments of manufacturers on a new specification before putting it into effect. These comments are often constructive and serve to reduce the cost of the product without sacrifice of quality. It is not to the advantage of the buyer to specify requirements that are widely at variance with manufacturing facilities, unless he is prepared to pay the increased cost which they entail. Goods of high quality will not be produced unless they can be sold, and they cannot be sold unless the consumer believes the price is justified by the quality. The cooperation of both groups, rather than unyielding dictation on the part of either, is the means to the desired end.

### **Brightman to Speak At A.H.E.A. Meeting**

Harold W. Brightman, chairman of the Advisory Committee on Ultimate Consumer Goods of the American Standards Association and of the merchandising division of the National Retail Dry Goods Association, and vice-president of L. Bamberger and Company, Newark, will speak on "The Growth of Consumer Influence in the Retail Field" at the annual meeting of the American Home Economics Association, Kansas City, June 21 to 25.

# A Dictionary of Merchandise Terms—

*“Silk,” “pure dye,” “waterproof,” should have same meaning to consumers and retailers, National Retail Dry Goods Association says in request for standard definitions*

by

**T. L. Blanke**

*Manager, Merchandising Division,  
National Retail Dry Goods Association*

**C**ONSUMER organizations have been saying, with steadily increasing insistence: “We want more facts about your merchandise in order that we may buy more wisely.” Women want to know about the grade, the use, the care of

the things they buy. They realize that price does not necessarily measure quality, and that they get the most for their money only when they know the attributes of the article they are buying and its fitness for the purpose it is meant to serve.

It is hard to imagine a woman who would wear gossamer sheer evening hose on a cross-country hike, yet mistakes equally ludicrous are sometimes made, simply because neither shoppers nor salespeople know enough about the grade and serviceability of the merchandise that is offered for sale in the average store.

Many organizations are making a sincere and earnest effort to teach the consumer the difference between various grades and types of merchandise.

## Standard Definitions Common Language

In order to give consumers, retailers, and manufacturers the benefit of a common language, fundamental in all standardization work, the National Retail Dry Goods Association has asked the American Standards Association to organize a project for standardizing definitions of terms used in retailing. The Advisory Committee on Ultimate Consumer Goods

has approved the recommendation and has submitted the request to the ASA Standards Council.

The work of the National Retail Dry Goods Association, outlined by Mr. Blanke in this article, will be used as the basis of the sectional committee's work, if the Standards Council approves the initiation of the project.

The background which makes this program of primary importance in the development of standards for consumer goods is described here by Mr. Blanke.

Among these, an excellent example is to be found in the Montgomery Ward & Company catalog issued this spring:

"You may have wondered why so many things at Ward's are offered at a choice of prices. For example, you may buy muslin sheets from us for 84 cents, 94 cents and \$1.22. Perhaps we can best explain this price variety in the following manner: The Economy Quality at 84 cents has a 60 x 56 thread count and is the lowest grade we can honestly recommend. It is by no means the lowest grade on the market—some sheets have as little as 52 x 48 threads to the square inch—and are loaded with so much filling material that after the first washing they resemble cheesecloth more than they do the sturdy, durable fabric you thought you were buying.

"But Ward's 84 cents sheet is a dependable quality. Under ordinary circumstances you can wash it 150 times—equal to almost three years of wear . . . a cost of 28 cents per year. A better sheet, listed as Ward's Longwear Quality, is available for 94 cents. It has 64 x 64 thread count. This sheet should wear over four years, or throughout 234 washings . . . a cost of 21 cents per year's wear.

"A still better sheet is Ward's Supreme Treasure Chest at \$1.22. It has 72 x 72 threads to the square inch—is woven in accordance with U. S. Government specifications. This is the most economical grade that can be bought—for service—

and satisfaction. It will last seven years or through 360 washings . . . a cost of only 17 cents per year's wear.

"It is the same with the other lines of merchandise we sell—there's a good quality for those who must spend today's pennies carefully . . . a better grade for those who can afford to buy a little more service—and the best grade for the thrifty, quality-loving person who knows the real savings of buying built-to-last merchandise."

### *Emphasizes Better Grades*

As this explanation demonstrates, placing the facts in the hands of the consumer will emphasize the desirability of the better grades of merchandise. A movement toward giving the consumer a basis for distinguishing between the various grades of a product, if it results in the purchase of better and more satisfaction-giving merchandise, is sound—for the consumer, for the retailer, and for the manufacturer.

The scattered efforts of individual organizations are not sufficient, however. No one person is able to know even the ordinary things that should be known about all merchandise for intelligent buying. So the ultimate consumer—housewife, office worker, business man—must have all the assistance that retailers and manufacturers can give. The logical first step to be taken in this direction is the preparation and distribution of a dictionary of merchandise terms—concise, condensed, and in a form suitable for ready reference, with a simplified, compact companion edition for the special use of the consumer.

A dictionary of this kind, kept up-to-date by frequent revisions, widely distributed and widely used, would provide manufacturers, retailers, and consumers with a much-needed common language for describing the composition, grade, and wearability of merchandise. It would establish an approved basis for the usage of certain trade terms in buying and selling merchandise of all types commonly classified as consumer goods. It should be used by copy-writers in retail stores as a basis for advertising copy; by store personnel groups for instruction of salespeople in merchandise information; by testing laboratories in reporting on merchandise examined; and by manufacturers in describing merchandise for sale.

Courtesy "Retailing"



*"Women want to know about the grade, the use, the care of the things they buy."*



Our British colleagues have been a step ahead of us in the field, and have, through their Retail Trading Standards Association, published *Standards of Retail Practice*, a handbook in loose-leaf form, which defines and explains trade names and terms used to describe grades, material content, and sizes of merchandise.

In defining terms, the British organization sought to give words the meanings they have in use between retailer and consumer, and to avoid special meanings which might have been acquired by words in trade and technical usage, but which are unfamiliar to the general public. Their procedure was to study descriptions and practices currently employed and to evolve rules for general guidance in avoiding misdescriptions. The general rules were then extended and illustrated by reference to a number of important types of merchandise, such as bedding, china and glass, furniture, furs, gloves, leather, millinery, piece goods. There are general rules, and also specific rules for individual types of merchandise, covering:

- Material content
- Trade names
- Descriptions relating to manufacture
- General descriptions
- Off-grades
- Sizes and measures
- Claims and statements
- Presentation of descriptions

Particularly interesting as an example of how these principles were applied in the British publication is the following excerpt from the general rules:

"No claim should be made concerning the attributes of merchandise as to the truth of which the retailer has not satisfied himself. The only exception to this General Rule is that where, by trade custom, words are used with a meaning different from their literal meaning, the distributor must offer the customer a guarantee of replacement if the claim implied in such a description is not sustained in use when the merchandise is subjected to normal wear and tear appropriate to the article in question, e.g., no garment is absolutely unshrinkable or fadeless in colour under all conditions, but if these words are used to indicate its high relative resistance to shrinkage or fading, the claim which is implicit in the use of such words as 'unshrinkable', 'fadeless', 'untarnishable', 'uncrushable', 'uncreasable', 'waterproof', 'ladderproof', 'holeproof', 'unbreakable', etc., must be met, if necessary, by replacement of the article in question."

Some of the specific definitions, quoted below, may also be of interest:

"*Chamois*. Gloves made from oil-dressed lamb or sheepskin, usually yellow or white, and washable."

"*Doe*. Gloves made from oil-dressed lamb or



Courtesy "Retailing"

#### A "standard" definition?

sheepskin, usually white or dyed, not necessarily fast to washing."

"*Silk*, whether net, spun, or schappe, means the natural product of the silkworm. *Silk* should not be applied to fabrics made of silk noils without qualification.

"*All silk* may be applied to fabrics where no textile fibre other than silk is present, irrespective of the amount of weighting, but *pure silk* may be applied only to silk where there is no metallic weighting or other weight of any kind, other than one which is an essential part of dyeing, provided that weighting of this character does not involve more than a 5 per cent addition to the degummed silk. *Pure dye silk* may be applied to *pure silk* (as defined above) which has no weighting of any kind, even in the dye.

"*Rayon* or *Artificial Silk* may be applied to fabrics produced from filaments made from modified or regenerated cellulose. It is permissible to abbreviate the description *artificial silk* to *art. silk*, provided that the full-stop indicating the abbreviation is prominent."

#### Need Dictionary

Much has been said in the past few years about the need for a similar dictionary of merchandise terms in this country. The project has received strong impetus from Harold W. Brightman, executive vice-president of L. Bamberger & Company, Newark, N. J., chairman of the Advisory Committee on Ultimate Consumer Goods of the

### British Retail Dictionary Available from ASA

*Standards of Retail Practice*, the British dictionary of terms used in retailing, published by the Retail Trading Standards Association, London, may be purchased from the American Standards Association. The ASA Library has placed orders for copies with the British association and expects a supply within the next few weeks.

American Standards Association, and chairman of the Merchandising Division of the National Retail Dry Goods Association. Mr. Brightman's fine work is of course well known to his many friends in the ASA. The projected dictionary also has the support of Channing E. Sweitzer, managing director of the National Retail Dry Goods Association, and of P. G. Agnew, secretary of the American Standards Association.

Without a doubt, the preparation of such a dictionary will be one of the greatest boons to the retailer who has his customer's best interests at heart. Retailers, always on the alert to please the customer, are eager to give her the information she desires about merchandise she buys. The dictionary will be a means by which they can make clear to themselves, to their customers, and particularly to their resources, what they mean by "taffeta", "flannel", and the hundreds of other terms whose meanings are often imperfectly understood nowadays.

### Better Selection

To accomplish this end, the dictionary would have to cover the characteristics, performance, grades, finish, and construction of the various types of merchandise. When this information is placed in the hands of the customer and comes into general use, she can better judge values, uses and limitations, and will be able to select more intelligently the articles best suited to her purposes. The widening use of new fibers, new materials, new constructions, makes this vitally necessary if the consumer is to derive the maximum satisfaction from her purchases.

The existence of a dictionary of merchandise terms will aid materially in the detection and elimination of untruthful or exaggerated advertising. Today, the consumer has no way of knowing, other than through bitter experience with unsatisfactory purchases, whether or not a store's

advertising is consistently dependable. If a descriptive term means the same to one store as to another, and means the same to the customer, there will be little room for inadvertent or deliberate misstatements on the part of manufacturers or retailers about the properties of merchandise.

A standard terminology will be particularly helpful to the retail stores in organizing their requests to manufacturers for information on what merchandise is made of, how it will wear, and how it should be handled for maximum service. If a fabric is defined as washable, then all retailers will check with their resources on its washability and assure their customers on this point. As matters stand now, too often one retailer stresses fiber content; another, tensile strength; a third, shrinkage; and so on. If some effort is made to decide upon the elements that distinguish one material from another, emphasis will be more uniformly upon those elements in the requests for information that are made by retailers and consumers.

### May Stimulate Standards

Obviously, too, standard terminology and standardized products go hand-in-hand, and the existence of a dictionary of merchandise terms may well prove a major stimulus to industry to establish standards for the manufacture, grading, and examining of many products which the consumer now buys blindly, with no sure guide to their quality.

Quality standards have already been defined by the ASA and the various bureaus of the Federal Government for some lines of commodities. Technical and research groups have also given out much information as to quality guides. Such data may well form the basis for the undertaking, and the initial step would be to collect all information that is now available, sift it, and present it in a plain, unbiased form for the use of the consumer.

The work, when completed, will not be the product of any one group of people, although direction must necessarily rest with a limited number. A group of technical experts, who have been devoting their time and keen minds for years to laboratory work in this field will direct the technical phases of the work. These men and women, who comprise the technical Committee on Standards of the National Retail Dry Goods Association, are:

Ephraim Freedman, R. H. Macy & Co., Inc.,  
New York, *Chairman*

Charles W. Dorn, J. C. Penney Company,  
New York

Nannene Goudy, Montgomery Ward & Company, Chicago

C. S. Pierce, Abraham & Straus, Inc., Brooklyn, N. Y.

C. W. Schoffstall, Marshall Field & Company, Chicago

Frank Stutz, Better Fabrics Testing Bureau, New York

Elizabeth C. Weirick, Sears Roebuck & Co., Chicago

We shall constantly seek the advice and assistance of national associations of manufacturers, commercial and store laboratories, the National Bureau of Standards, the Bureau of Home Economics, the Bureau of Agricultural Economics, the Food and Drug Administration, the national consumer organizations and the Consumer-Retailer Relations Council.

We are most fortunate to be able to count upon the cooperation of the ASA, its experienced staff, and its committees, particularly its Advisory Committee on Ultimate Consumer Goods, with its wide representation of national consumer organizations. Their advice will be invaluable in making this not only the practical, helpful book which is wanted, but also a publication that will fit in exactly with consumer needs. Consumer guidance is essential to its success.

### Past 25 Years Sees Standardization Vital

"In these 25 years, (1912-1937), standardization made great headway in thousands of ways. Criticized for overstandardization in some ways, business declared that the more abundant life was made possible by standardization of 10,000 gadgets, materials, processes, that it made for greater inward freedom instead of less. Pointed to with pride was work like that of the Society of Automotive Engineers, the National Bureau of Standards, the American Standards Association—a dynamic, creative force, saving the automobile industry alone an estimated \$750,000,000 annually, helping to make a car per family almost the American average.

"Remembered was the fact that 25 years ago, before the benefits of standardization were well understood or its principles applied, confusion was common, repairs were slow, the blacksmith at his leisure made the broken part—if it could be made at all. They remembered that in 1911, on one seemingly inconsequential item, lock washers, one company supplied 800 different sizes of washers for bolts varying in diameter just from three-sixteenths inch to one-half inch—not be-

### Lehigh Valley Railroad Names Kerr President



D. J. Kerr

D. J. Kerr, member of the Board of Directors of the American Standards Association, has just been named president of the Lehigh Valley Railroad Company. Mr. Kerr succeeded Edward E. Loomis, who resigned as president May 5 and was elected chairman of the board, and to whom Mr. Kerr had been assistant.

Mr. Kerr began his railway service with the Pennsylvania Railroad and was connected later with the Chicago, Milwaukee & Puget Sound (now the Chicago, Milwaukee, St. Paul & Pacific), the Oregon Trunk, and the Spokane, Portland & Seattle Railroads. Going to the Great Northern in 1913, he served for 16 years as assistant to the vice-president in charge of operations and was president of coal and lumber subsidiaries. He became associated with the Lehigh Valley on June 1 of last year.

Mr. Kerr became a member of the ASA Board of Directors this year as a nominee of the Association of American Railroads.

cause so many sizes of bolts were necessary, but because there was no standardization."—*Nation's Business*, May 1.

## New Foreign Standards Available to ASA Members

Copies of new standards from many foreign countries have recently been received by the American Standards Association and may be borrowed by ASA Members. The ASA Library will order copies of any of these standards for Members wanting to buy them. Please order standards by serial number.

New foreign standards now in the Library include:

- |                       |  |
|-----------------------|--|
| <i>Serial<br/>No.</i> | <i>South Africa</i>  |
| 927.                  | Specifications for lime  |
| 928.                  | Standardization of coal sampling for use in South Africa   |
| 929.                  | Standardization of proximate analysis of coal and determination of calorific value for use in South Africa |
| 930.                  | Standard list of white metal alloys  |
| 931.                  | Specifications for soap for industrial purposes  |
| 932.                  | Specifications for water pipes and fittings  |
| 933.                  | Standard types of salt-glazed stoneware pipes and fittings.  |

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|      | <i>Austria</i>                                  |
| 934. | Flat glass                                      |
| 935. | Reinforced concrete, steps for stairs           |
| 936. | Structural engineering stresses in masonry work |

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|------|--------------------------------------|
|      | <i>Norway</i>                        |
| 937. | Cylindrical jig bushings             |
| 938. | Taper jig bushings                   |
| 939. | Cylindrical jig bushings with flange |
| 940. | Tin-cans for fruit and vegetables    |
| 941. | Canned green peas—classification     |
| 942. | Canned pears—classification          |
| 943. | Canned plums—classification          |

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|------|--|
|      | <i>Sweden</i>  |
| 944. | Specifications for direct-current generators for arc welding     |
| 945. | Specifications for rubber-insulated cable                        |
| 946. | Specifications for cable terminating boxes                       |
| 947. | Specifications for porcelain insulators for overhead power lines |
| 948. | Grain drill feed units   |
| 949. | Grain drill, frame, transmission and furrow openers              |
| 950. | Dump hay rake  |
| 951. | Hay tedder   |
| 952. | Stiff tooth harrow with planker                                  |
| 953. | Spring tooth harrow with planker                                 |
| 954. | Common spring tooth harrow                                       |
| 955. | Spring tooth cultivator  |
| 956. | Disc harrow  |
| 957. | Earthenware preserving jars                                      |
| 958. | Earthenware pots for salting (foods)                             |
| 959. | Earthenware salt boxes   |
| 960. | Bedsteads for adults   |
| 961. | Bedsteads for adults, mental diseases                            |
| 962. | Bedsteads for children between 7 and 14 years                    |
| 963. | Bedsteads for children between 4 and 7 years                     |
| 964. | Bedsteads for babies   |
| 965. | Ambulances   |

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|      | <i>Holland</i>   |
| 966. | Specifications and methods of test for bituminous building materials |
| 967. | Thickness and types of lines for technical drawings                  |
| 968. | Symbols for units  |
| 969. | Round concrete pipes   |

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|------|---|
| 970. | Oval concrete pipes   |
| 971. | Cable accessories, connector clips for taking off taps from cables  |
| 972. | Cable accessories, filling compound for heavy current cable boxes; general prescriptions and testing specifications, I, II and III. |
| 973. | Zinc white quick drying oil   |
| 974. | Benzol 90%/100% for paints and varnish  |
| 975. | Coal tar products—purified toluol   |
| 976. | Coal tar products—purified xylol  |
| 977. | Coal tar products—solvent naphtha, I, II  |

## A.S.T.M. Publishes Its 1936 Book of Standards

The 1936 *Book of A.S.T.M. Standards*, published recently by the American Society for Testing Materials, is available from the ASA Library. This triennial publication contains all of the standard specifications, methods of test, recommended practices, and definitions formally adopted by the Society. The 1936 issue is in two parts—Part I giving in their latest form all A.S.T.M. standards covering metallic materials; Part II, all standards relating to non-metallic materials.

Of the 181 standards in Part I, 109 cover the ferrous metals, steel, wrought iron, pig iron and iron castings and ferro-alloys, while 60 relate to non-ferrous metals, including aluminum and magnesium alloys, copper and copper alloys, lead, nickel, zinc, bearing metals, solder metal, deoxidizers, electrical-heating and electrical-resistance alloys. Twelve of the standards involve metallography and general testing methods.

Many new standards adopted in 1936 covering various non-metallic materials are included in Part II:

- High-Early-Strength Portland Cement
- Natural Building Stone
- Load-Bearing Concrete Masonry Units
- Structural Clay Tile
- Clay Fire Brick for Malleable Furnaces, Annealing Ovens, and Stationary Boiler Service
- Refractories for Incinerators
- Ground Fire Clay
- Sodium Silicate for Curing Concrete
- Titanium Dioxide
- Zinc Sulfide
- Normal Amyl Acetate
- Industrial 90 per cent Benzene (Benzol)
- Rubber Belting
- Rubber Hose
- Asbestos Roving for Electrical Purposes
- Asbestos Yarns
- Woolen and Worsted Yarns
- Round-Hole Screens for Testing Purposes

Copies of the book in blue cloth binding can be obtained from A.S.T.M. Headquarters, 260 S. Broad St., Philadelphia, Pa., at the following prices: Either part, \$7.50; both parts, \$14.00.



## Standards Bureau Adds New Values For Measuring Wave Lengths

A new set of values, extending the international secondary standards for measuring wave lengths to cover the range most commonly used in spectroscopic observations, has recently been supplied by two scientists working with the National Bureau of Standards.

Wave lengths corresponding to monochromatic spectral radiations are easily measured with high precision if suitable standards are available, says an article in the *Technical News Bulletin* of the National Bureau of Standards, May.

To facilitate such measurements in spectroscopy and astrophysics, the International Astronomical Union has compiled and adopted a system of standards consisting of a primary (the red radiation from cadmium measured relative to the meter), and numerous secondary standards distributed throughout the spectrum of iron. The latter are determined relative to the former but they achieve international recognition only after three concordant but independently determined values are available.

In 1928, the I.A.U. adopted 244 values of visible and near ultraviolet iron lines as secondary standards, and recommended that measurements

be made of longer and shorter waves. Since then, two series of determinations of shorter waves (one made at the Imperial College, London, and the other at Allegheny Observatory, Pittsburgh) have been published.

A third set of values has now been supplied by Drs. William F. Meggers and Curtis J. Humphreys of the National Bureau of Standards. This will make it possible to extend the international secondary standards about two-thirds of an octave to shorter waves, thus covering the range most commonly used in spectroscopic observations.

These standards, which are reported in Research Paper 992 (*Journal of Research*, May), are determined from measurements of interference patterns produced under specified conditions by the individual lines. The values now being published by the Bureau are given, in many cases, to eight significant figures since calculations of probable errors and tests of relative value by means of the combination principle (constancy of wave number differences of pairs of lines having two atomic energy states in common) indicate errors of the order of one part in ten millions.

## Standards to Help Public Works Engineers

The American Public Works Association is issuing a group of standard specifications for the construction of public works improvements which are designed to serve as a guide for the public works engineer. The volume, *Standard Specifications for Public Works Construction*, is now in press and will be available within several weeks.

Twenty-two specifications covering subgrades and foundations for pavements, bituminous pavements, brick pavements, sidewalks and curbs, and stone block pavements are included in the initial group of specifications. These specifications cover a wide field of public works construction and additional specifications on other types of work will be issued from time to time. Several of these are now being prepared.

The APWA Standard Specifications are prepared by special committees of the Association and are reviewed annually.

Copies are for sale at \$3.00 each by the American Public Works Association, 850 East 58th Street, Chicago.

## Change Simplified Lists For Coated Abrasives

Simplified lists for flint and emery coated abrasives and for coated abrasives other than flint and emery have been made effective by the National Bureau of Standards as a revision of Simplified Practice Recommendation R89.

Type of backing, size of sheet, type of coating, and grade number for each class of product are shown.

The original recommendation effective in 1928 reduced the approximately 8,000 varieties to 1,976, which it was estimated would be suitable for at least 95 per cent of the trade. The present revision eliminates two varieties and adds ten which have come into use recently. It also includes definitions and an explanation of the terms used in the tables.

Free mimeographed copies of the revision may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C., until printed copies are available or may be ordered through the Library of the American Standards Association.

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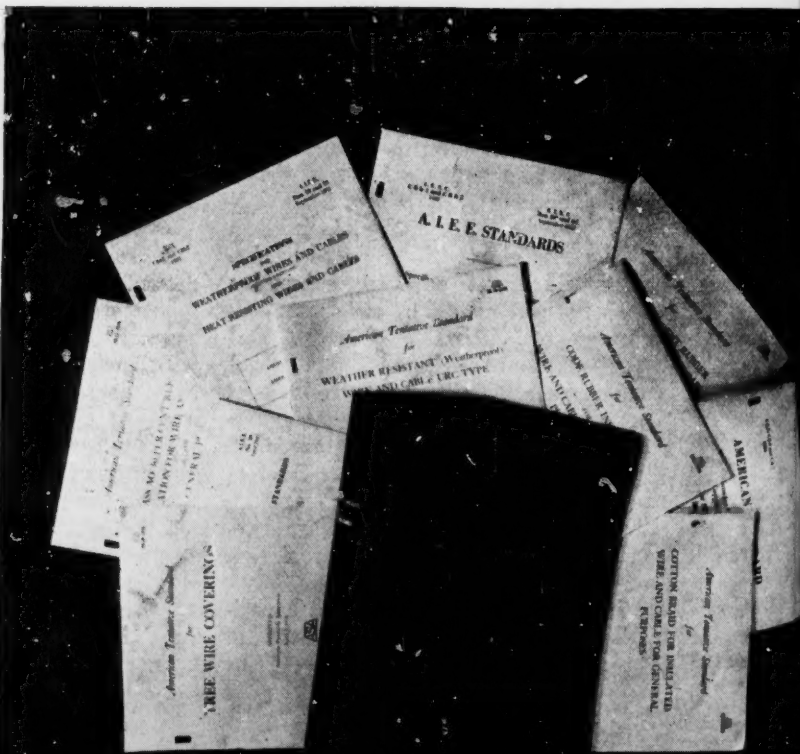
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